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## Environmental Lead after Hurricane Katrina

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I support the warning from Rabito et al. (2012) about the hazards of power sanding and their call for enforcing the New Orleans, Louisiana, Code of Ordinances (2001) and U.S. Environmental Protection Agency (EPA) Renovation, Repair, and Painting Rule (U.S. EPA 2008) for cleanup of residual lead dust at residential properties. Power sanding has been a scourge to the safety and well-being of children and pets in New Orleans for many years (Jacobs et al. 2003; Mielke et al. 2001).

Unfortunately, Rabito et al. (2012) made a fundamental error by comparing medians from soil data (Mielke et al. 2005), which I shared with them, with principally foundation soil data. These medians included four sample locations: foundation, open space (i.e., mid-yard), residential-street side, and busy-street side. Comparing pre-Katrina median soil lead from our survey with foundation soil samples post-Katrina does not provide insight into foundation soil lead changes stemming from renovation.

Furthermore, evidence from Louisiana blood lead surveillance shows decreasing—not increasing—exposure after Hurricane Katrina. The 2008 Orleans Parish results show that 38.5% of the children were tested, and 6.4% of these presented with lead concentrations ≥ 10 µg/dL (Louisiana Childhood Blood Lead Surveillance System 2009). In 2010, 40.0% of the children in Orleans Parish were tested, including a higher proportion of children from outer areas of New Orleans, and 3.3% presented with ≥ 10 µg/dL (Louisiana Childhood Blood Lead Surveillance System 2010). The continuing pattern of lead poisoning is uneven, with larger prevalence in the interior of the city and lower prevalence in outer areas of the city (Zahran et al. 2011, their Figure 1). From the perspective of lead changes in soil and blood, both measurements decreased after Katrina (Zahran et al. 2010). Although large numbers of children are still at risk from lead poisoning, the blood lead trends reported for New Orleans do not support the future implications suggested by Rabito et al. (2012).

Regarding the future, it is important to note that New Orleans is undertaking improvements to playgrounds so children will have lead-safe play areas in every neighborhood (Schleifstein 2011). A project is also under way to improve the quality of play areas at New Orleans child care centers (Mielke et al. 2011a). In addition, projects to eliminate lead-based paint and soil lead hazards at public housing properties are ongoing (Reckdahl 2011). The implications are that in the future, New Orleans will be safer with respect to lead. Private residential properties often have higher risk for lead poisoning than do public properties (Mielke et al. 2011b), and Rabito et al. have appropriately called attention to the need to address lead contamination of private residential properties.

*The author serves as the principal investigator for a U.S. Department of Housing and Urban Development Technical Studies Grant to Tulane University, which concerns changes in the New Orleans play environment for children before and after Hurricane Katrina.*

**Howard W. Mielke**
Tulane University School of Medicine
New Orleans, Louisiana
E-mail: hmielke@tulane.edu

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## Environmental Lead: Rabito et al. Respond

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We thank Mielke for his interest in our study of residential lead hazards in New Orleans (Rabito et al. 2012). In our study we found that most homes had either dust or soil lead above federal standards and concluded that children are at risk for lead exposure. Regarding the specific issue of whether soil lead has increased or decreased, we agree that a direct comparison between census-level soil lead survey data and direct measurements of residential samples has limitations. To reiterate the limitations outlined in our article (Rabito et al. 2012), differences in the number of soil samples, the sampling methodology, and the sample location limited our ability to directly measure any change in soil lead levels.

Although it is of interest to know whether soil lead has increased or decreased as a result of Hurricane Katrina, our focus was to measure current residential lead hazards, because lead contamination in and around homes is the primary pathway of exposure for children (Lanphear and Roghmann 1997). Our finding that 61% of homes had lead levels above federal standards provides evidence that New Orleans children are at high risk of exposure. That the samples were collected from homes typically considered to be low risk (given the sociodemographic characteristics of the sample) is cause for added concern.

In his letter, Mielke refers to trends in blood lead levels. The issue of whether blood lead levels are increasing or decreasing in New Orleans children—which was not within the scope of our study (Rabito et al. 2012)—is not easily addressed using surveillance data. Screening practices and rates drive the reported prevalence in any given year. Zahran et al. (2010) compared aggregate blood lead levels derived from the Louisiana Childhood Blood Lead Surveillance System (CBLSS) pre-Hurricane Katrina to levels post-Hurricane Katrina and found that median blood lead had decreased. However, profound changes in the sociodemographic makeup of the New Orleans population make the comparison vulnerable to significant bias (Bloomberg 2011). The surveillance data provided by Mielke supports our notion that the post-Hurricane Katrina population screened under the CBLSS is not stable from year to year. As stated by Mielke, 6.4% of children had elevated blood lead levels in 2008, but the estimate decreased to 3.3% in 2010. This decrease might not be valid because the majority of children in the 2008 cohort were from the inner city (with the highest prevalence of old housing) whereas the 2010 cohort included a higher proportion from outer areas of the city (considered low risk based on housing age). The assumption by Zahran et al. (2010) that soil lead serves as a proxy for length of lead exposure is likely not valid given the amount of housing destabilization and subsequent mobility of the population in the years following the storm. Finally, low screening rates, coupled with a reporting level of > 10 µg/dL (widely accepted as above the level of concern) does not allow for the valid estimation of the prevalence of elevated blood lead levels in New Orleans children.

Regardless of the inconclusive nature of blood lead data, given that 61% of sampled homes have significant lead hazards, we maintain that New Orleans children who live in old housing are at risk for lead exposure independent of race or income. We support the recent statement by the Centers for Disease Control and Prevention Advisory Committee on Childhood Lead Poisoning Prevention that "the goal of primary prevention is to ensure that all homes become lead-safe and do not contribute to childhood lead exposure" (Centers for Disease Control and Prevention 2012). The City of New Orleans has made strides in its fight to reduce lead hazards in public places; however, they should not relax in their efforts to protect the environment from further contamination.

*The authors declare they have no actual or potential competing financial interests.*

**Felicia A. Rabito**
**Janet C. Rice**
**Whitney Arroyave**
School of Public Health and Tropical Medicine
Tulane University
New Orleans, Louisiana
E-mail: rabito@tulane.edu

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## Erratum

In Figure 4B of the article "*Para-* and *Ortho*-Substitutions Are Key Determinants of Polybrominated Diphenyl Ether Activity toward Ryanodine Receptors and Neurotoxicity" by Kim et al. [Environ Health Perspect 119:519–526 (2011)], the authors inadvertently included the same representative trace for the BDE-47 exposure (second trace in Figure 4B) as for the vehicle exposure (first trace). Figure 4B has been corrected here.

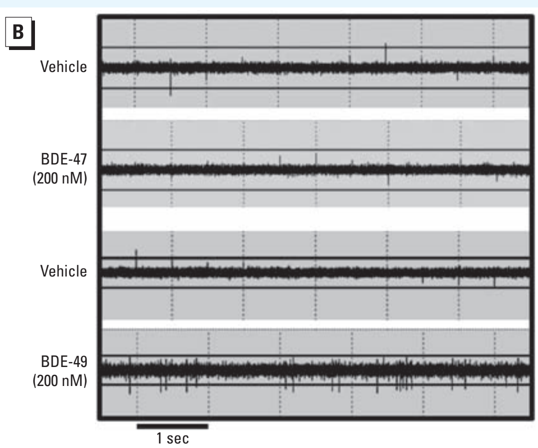


**Figure 4B.** Representative raster plot of spike trains over a 6-sec period in neurons exposed acutely to vehicle, BDE-47, or BDE-49.

The authors apologize for the error.